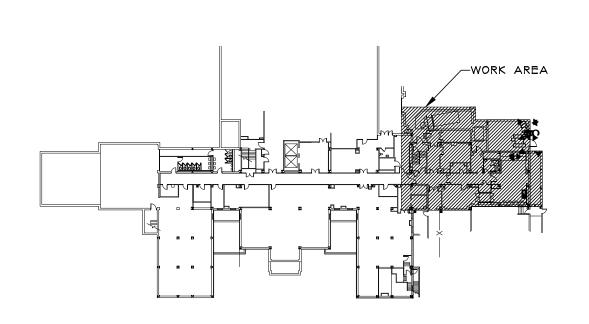
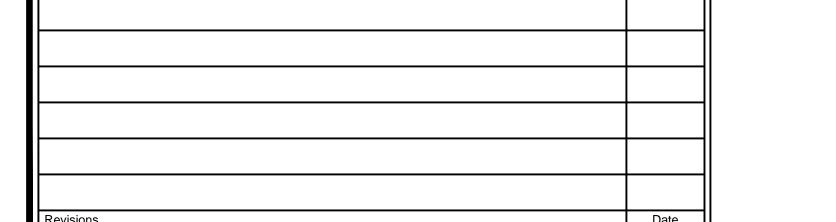


- KEYED NOTES:
- EXISTING FIRE DAMPER TO BE REMOVED ALONG WITH ASSOCIATED DUCTWORK.
- REMOVE EXIST. EXHAUST FAN INCLUDING ALL ASSOCIATED SUPPORTS, CONTROLS AND APPURTENANCES UNDER.
- 3 ABANDONED EXHAUST DUCT TO BE REMOVED BACK TO A POINT ABOVE NEW CEILING AND CAPPED.
- REMOVE EXIST AIR HANDLING UNIT INCLUDING ALL ASSOCIATED SUPPORTS, CONTROLS AND APPURTENANCES.







IPD: Engineering
INTEGRATED PROJECT DELIVERY

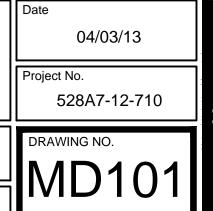
ONE WEBSTER'S LANDING
SYRACUSE, NEW YORK 13202
315.423.0185

IPD PROJECT No: 12-7304-8

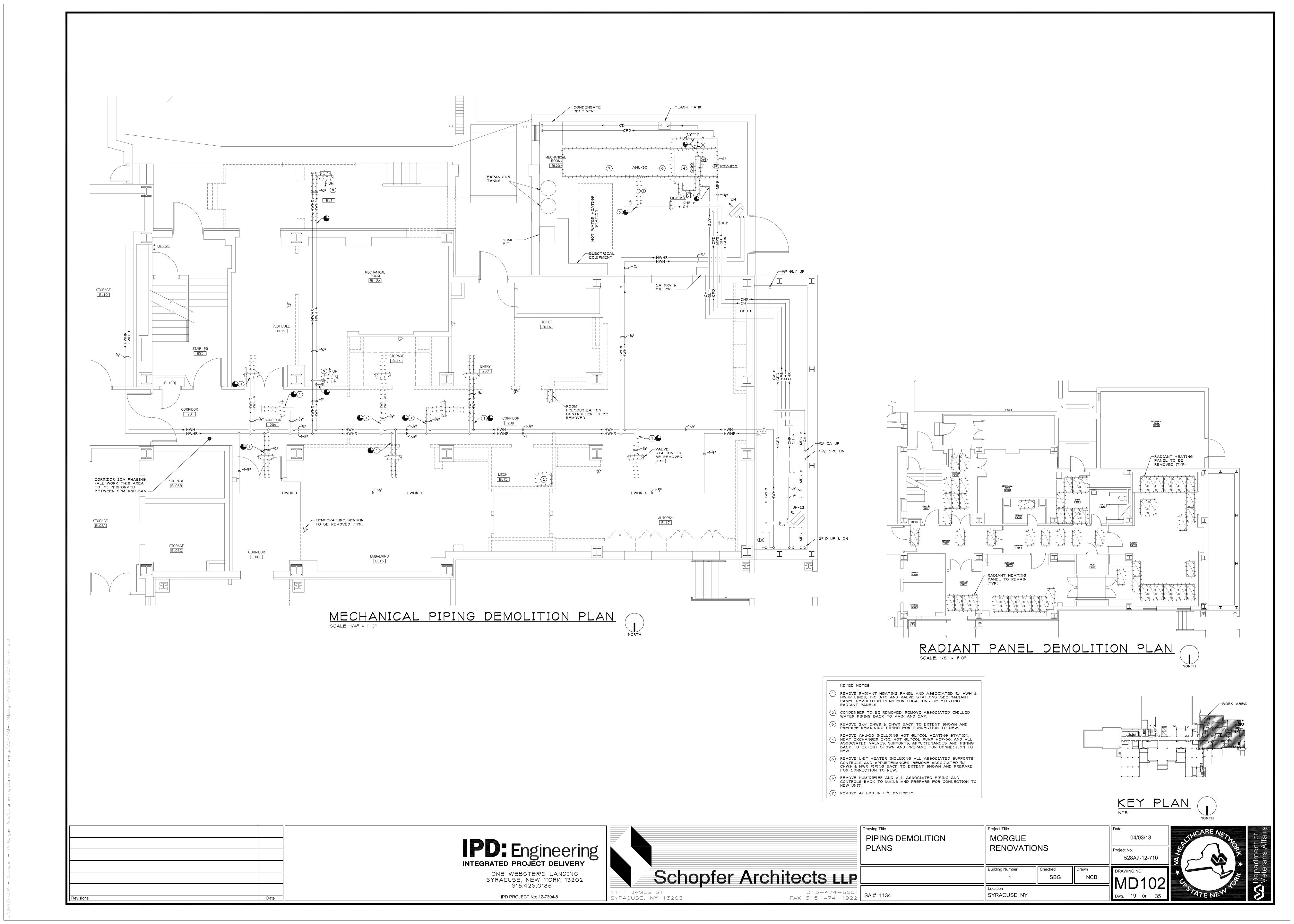


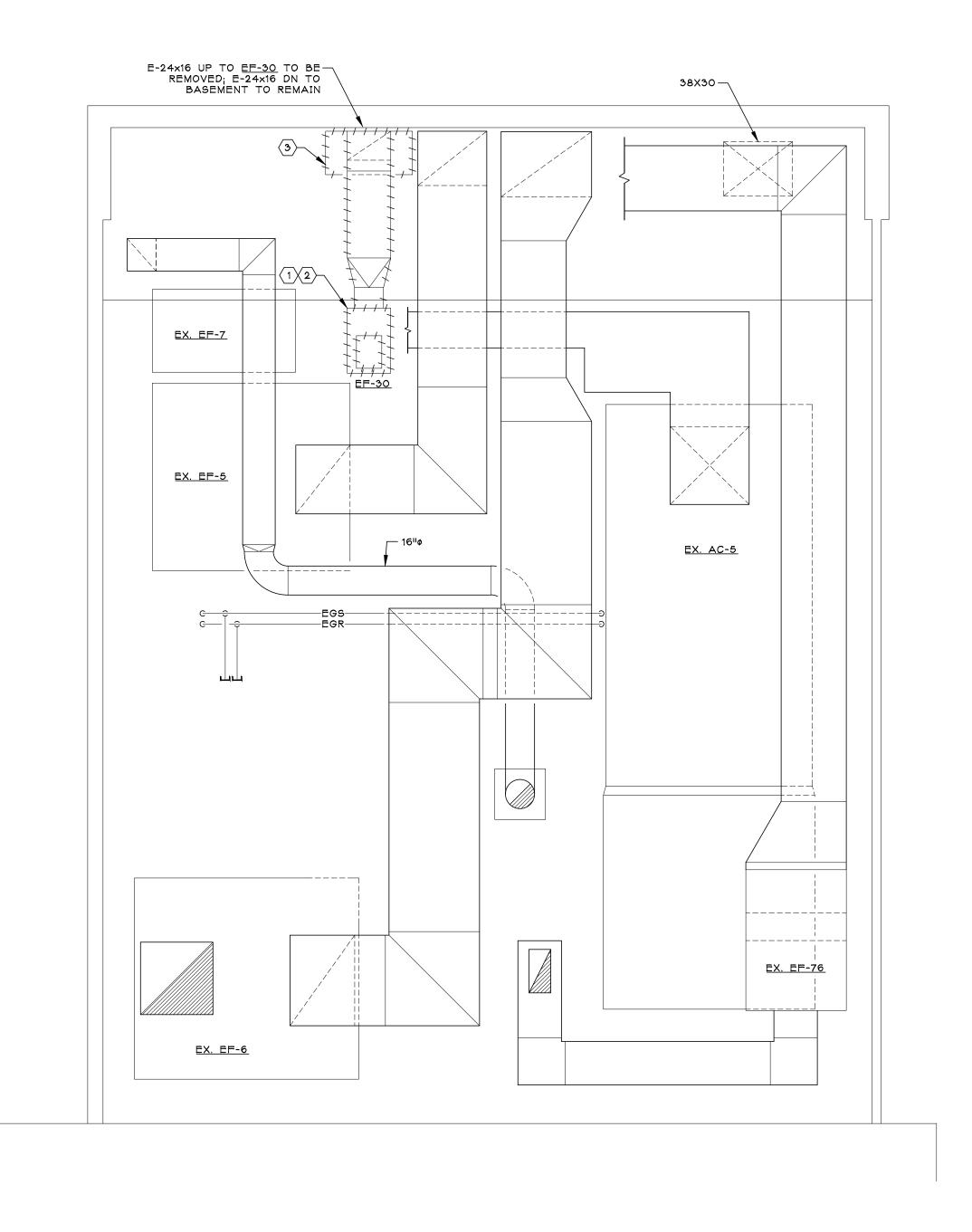
Drawing Title DUCTWORK DEMOLITION PLANS	MORGUE RENOVATIO	NS	
	Building Number 1	Checked SBG	Drawn NCB

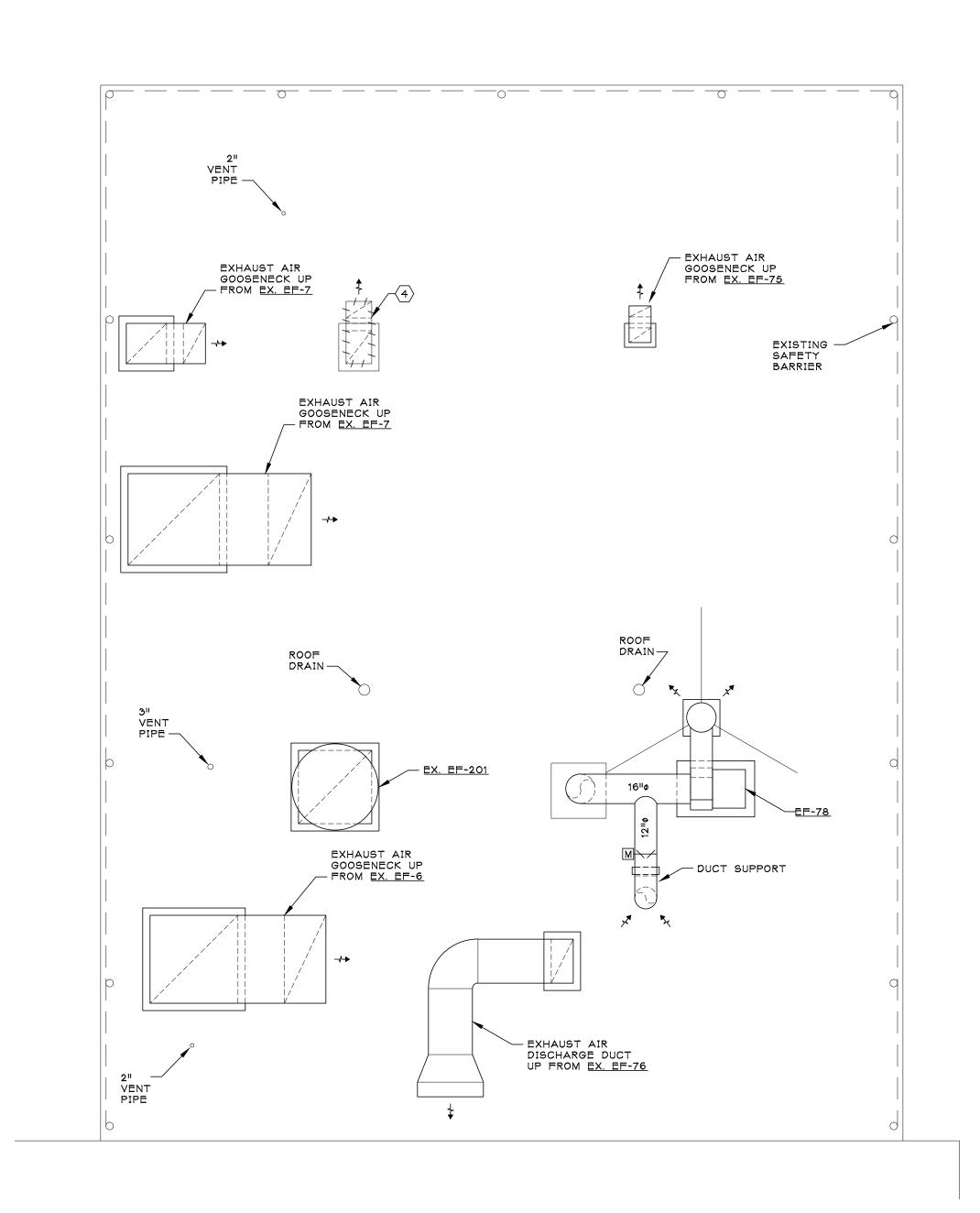
SYRACUSE, NY











REMOVE DUCTWORK UP THRU ROOF PENETRATION. RETAIN OPENING AND CURB FOR NEW DUCT.

2 REMOVE EXISTING EF-30 INCLUDING ALL ASSOCIATED DUCTWORK, CONTROLS HANGERS ETC.

REMOVE EXISTING HEPA FILTER HOUSING INCLUDING ALL ASSOCIATED SUPPORTS AND APPURTENANCES. REMOVE ALL ASSOCIATED EXHAUST DUCTWORK DN TO BASEMENT LEVEL. SEE SHEET MD-101 FOR CONTINUATION.

4 EXHAUST AIR GOOSENECK UP FROM <u>EF-30</u> TO BE REMOVED. EXISTING OPENING AND CURB SHALL REMAIN FOR NEW DUCT PENETRATION.

9TH FLOOR SHAFT-2 HVAC DEMOLITION PLAN

SCALE: 1/4" = 1'-0"

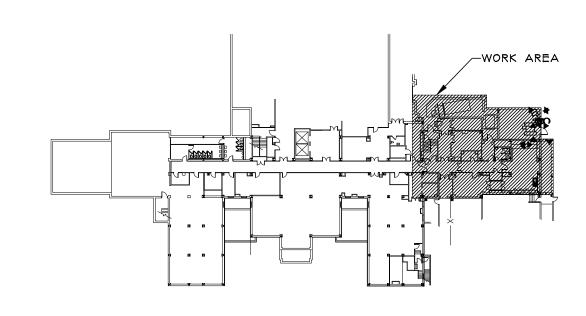
NORTH



ROOF LEVEL SHAFT-2 HVAC DEMOLITION PLAN

SCALE: 1/4" = 1'-0"

NORTH



KEY PLAN



IPD: Engineering
INTEGRATED PROJECT DELIVERY ONE WEBSTER'S LANDING SYRACUSE, NEW YORK 13202 315.423.0185

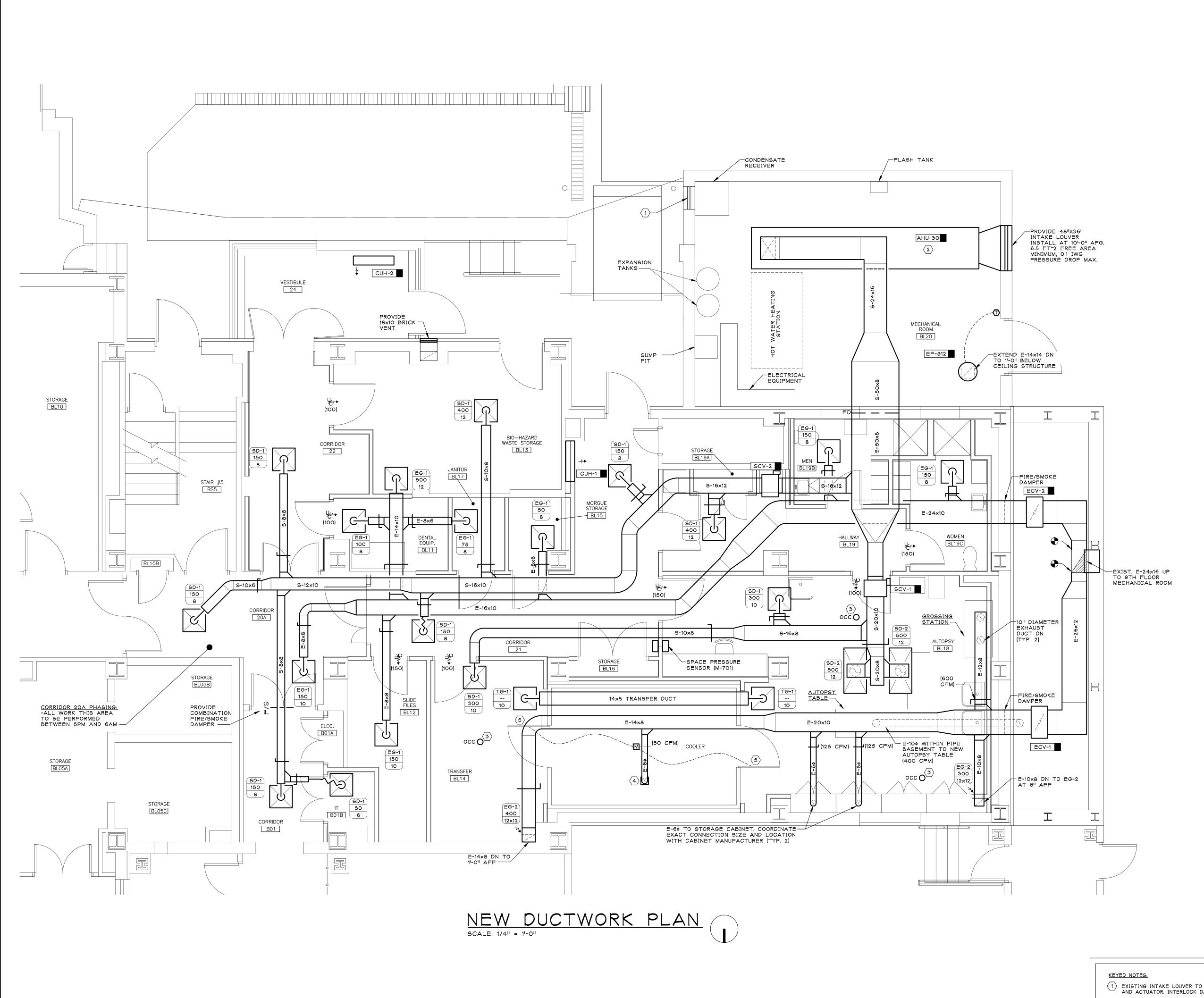
IPD PROJECT No: 12-7304-8



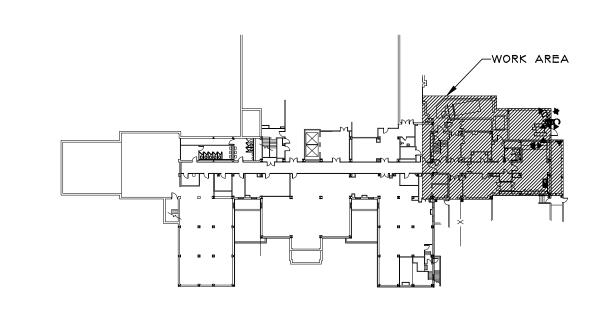
Orawing Title SHAFT -2 DEMOLITION	Project Title MORGUE			Date
PLANS	RENOVATI	IONS		Project
	Building Number 1	Checked SBG	Drawn NCB	DRAV

Location SYRACUSE, NY





- EXISTING INTAKE LOUVER TO REMAIN. REPLACE ASSOCIATED MOTORIZED DAMPER AND ACTUATOR. INTERLOCK DAMPER WITH <u>EF-912</u>.
- PROVIDE NEW AHU-30 IN LOCATION OF PREVIOUS AHU. MODIFY EXISTING STEEL SUPPORT FRAME AS NECESSARY TO ACCOMMODATE NEW AIR HANDLING UNIT DIMENSIONS AND WEIGHT. INCLUDE ALL RELATED COMPONENTS: INCLUDING BUT NOT LIMITED TO CASING, DUCTWORK, FAN, HEATING COIL, COOLING COIL, HUMIDIFIER, HEAT EXCHANGER, FILTERS AND CONTROLS.
- PROVIDE CEILING MOUNTED, DUAL TECHNOLOGY OCCUPANCY SENSOR TO CONTROL OCCUPIED AND UNOCCUPIED VENTILATION MODES.
- E-6" DN TO 8x8 EXHAUST GRILLE WITHIN MORTUARY COOLER. COORDINATE EXACT PENETRATION SIZE AND LOCATION WITH MORTUARY COOLER MANUFACTURER. PROVIDE DAMPER AND INTERLOCK OPERATION WITH DOOR SWITCHES.
- PROVIDE DOOR CONTACT SWITCHES AND INTERLOCK WITH EXHAUST DAMPER TO OPEN DAMPER WHEN EITHER DOOR IS OPENED.





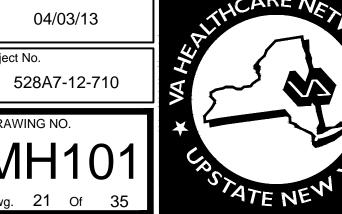


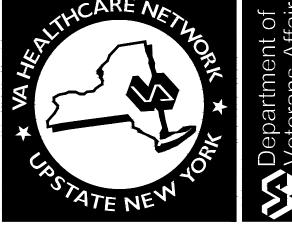
IPD: Engineering
INTEGRATED PROJECT DELIVERY ONE WEBSTER'S LANDING SYRACUSE, NEW YORK 13202 315.423.0185

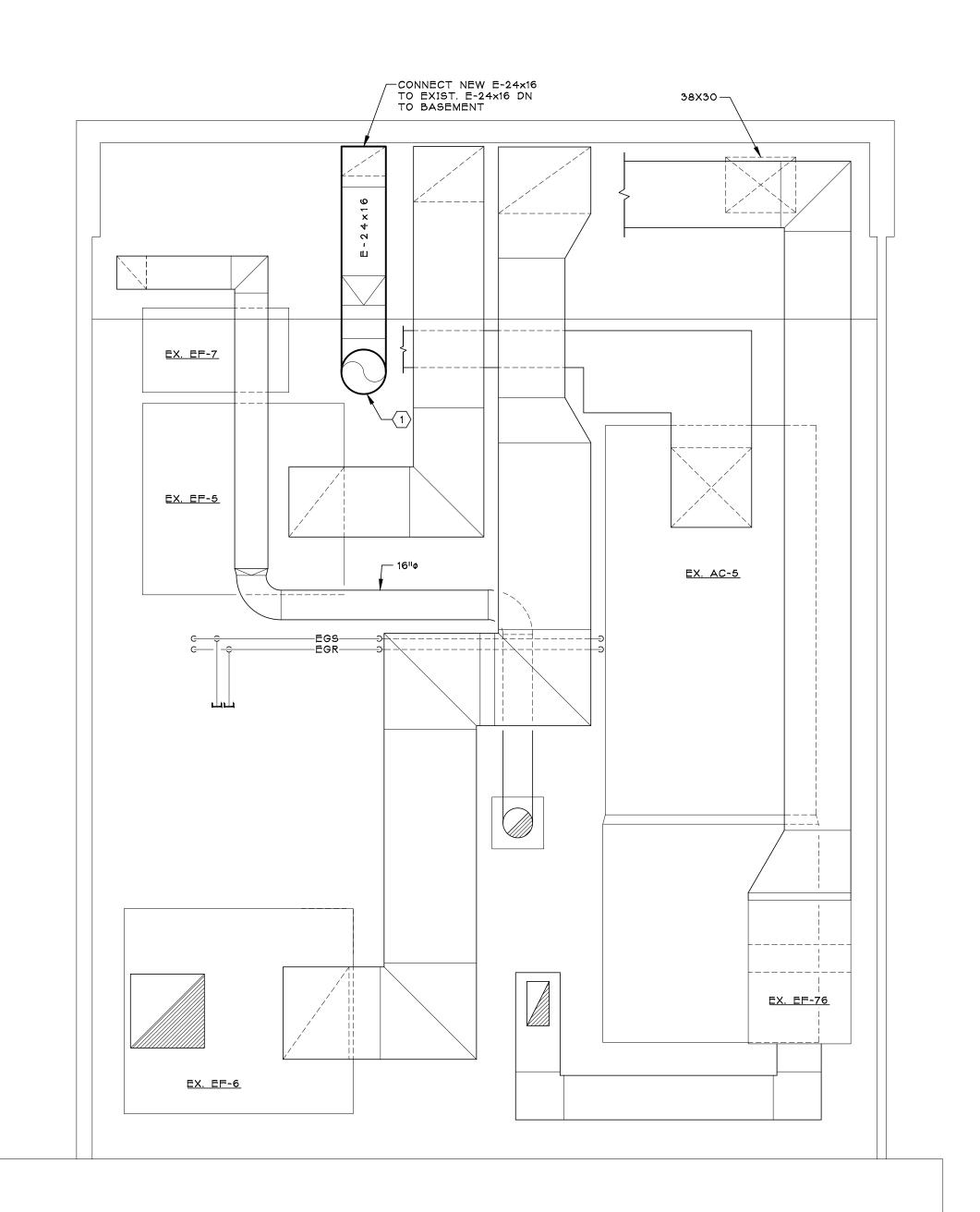
IPD PROJECT No: 12-7304-8



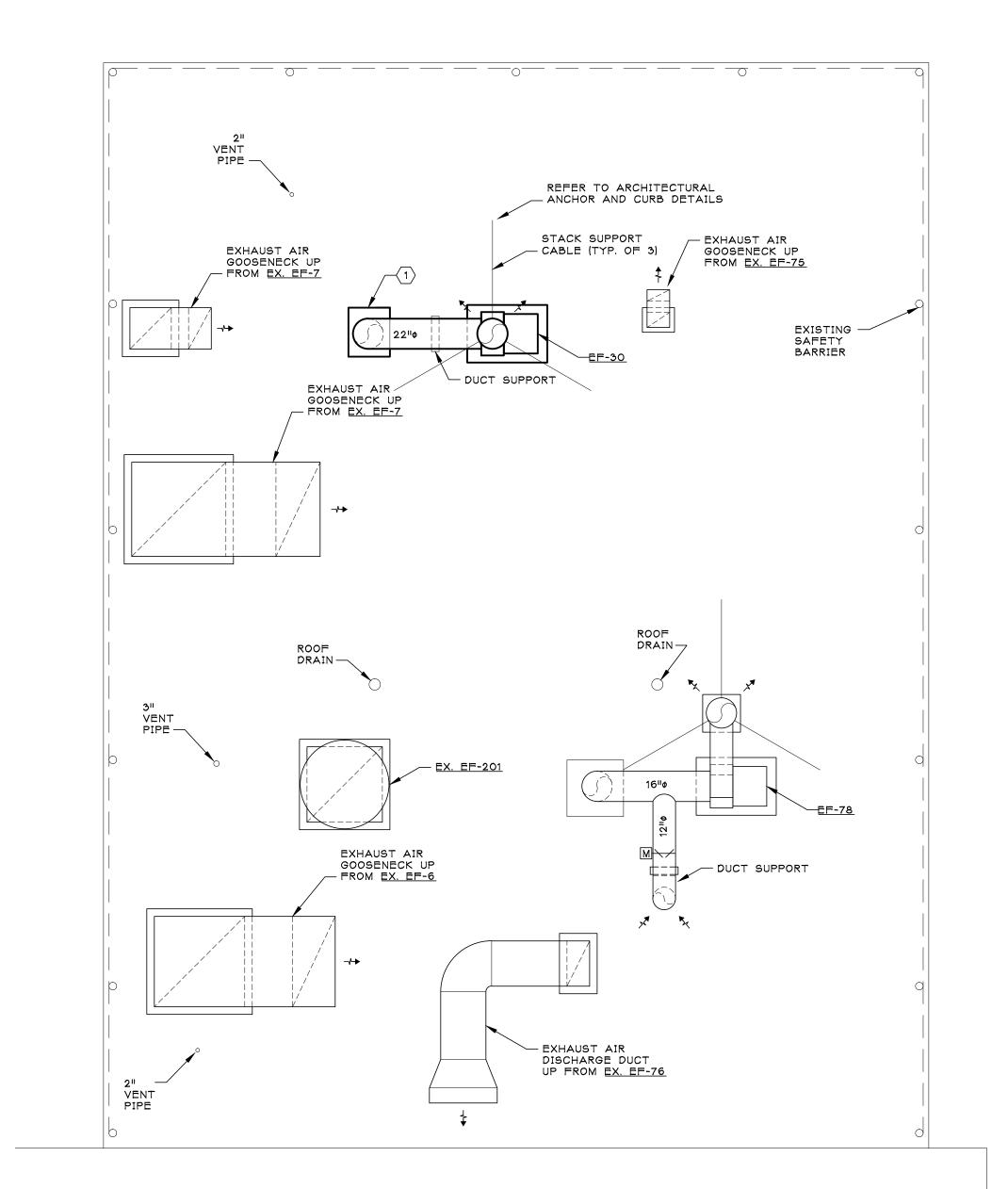
P	Drawing Title DUCTWORK PLANS	Project Title MORGUE RENOVATIO	ons	
P		Building Number 1	Checked SBG	Drawn NCB
== 0 1 2 2	SA # 1134	Location SYRACUSE, NY		







9TH FLOOR SHAFT-2 HVAC PLAN
SCALE: 1/4" = 1'-0"
NORTH



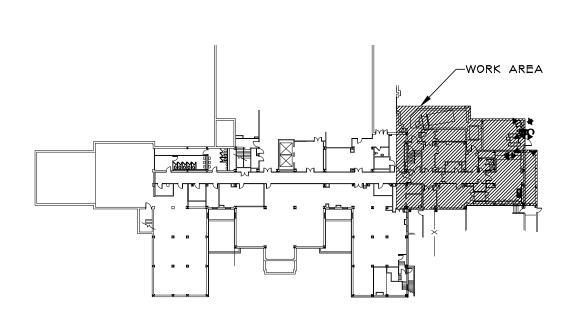
ROOF LEVEL SHAFT-2 HVAC PLAN

SCALE: 1/4" = 1'-0"

NORTH

KEYED NOTES:

1 PROVIDE 22" DUCTWORK UP THRU EXISTING ROOF PENETRATION. PROVIDE NEW CURB CAP AND SEAL ROOF PENETRATION AND EXISTING ROOF CURB WEATHER-TIGHT.



KEY PLAN NORTH

Doubsiege Date

IPD: Engineering
INTEGRATED PROJECT DELIVERY

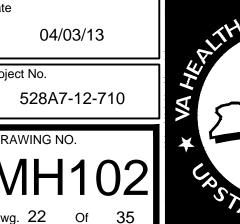
ONE WEBSTER'S LANDING
SYRACUSE, NEW YORK 13202
315.423.0185

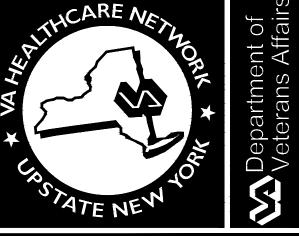
IPD PROJECT No: 12-7304-8

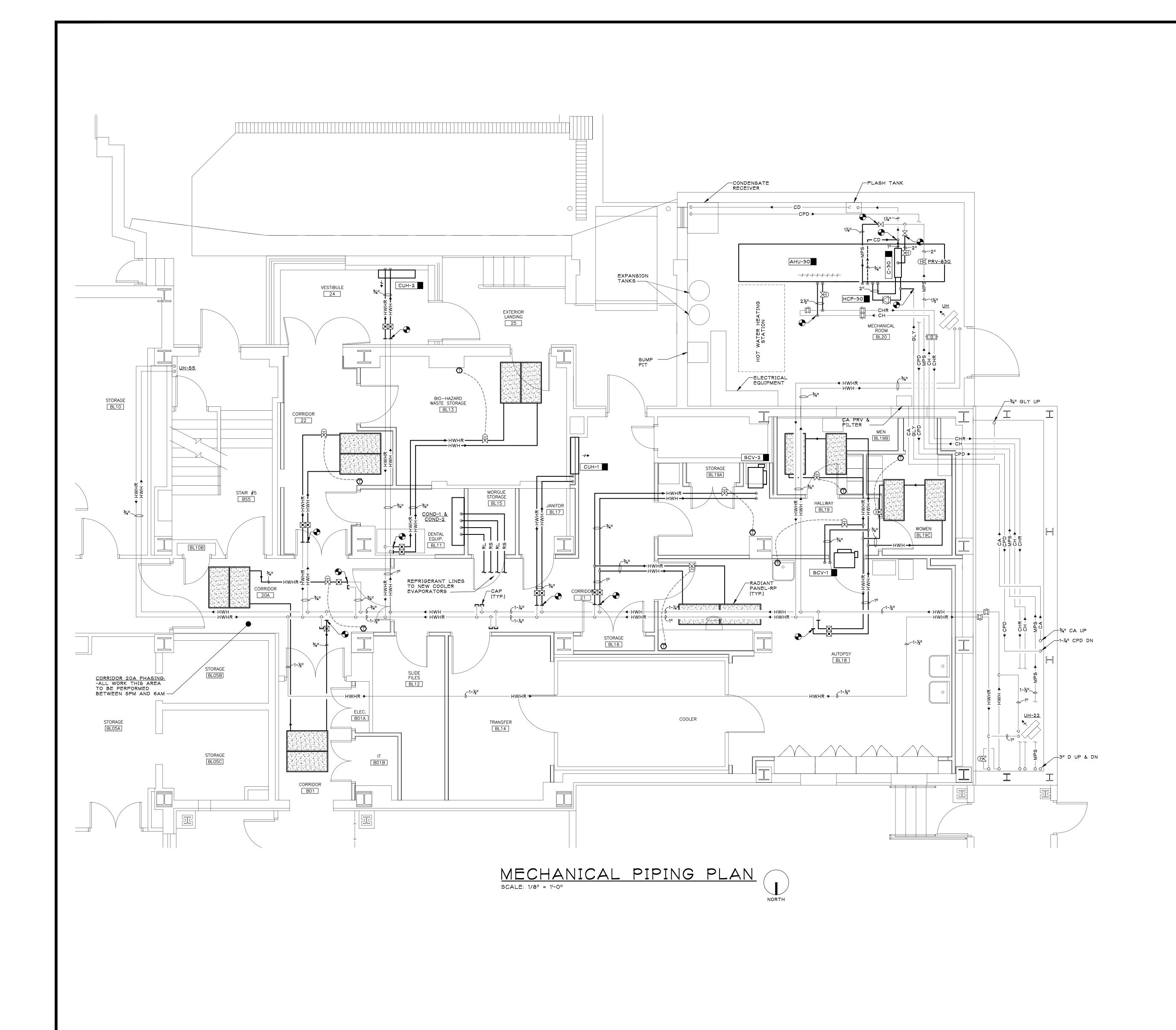


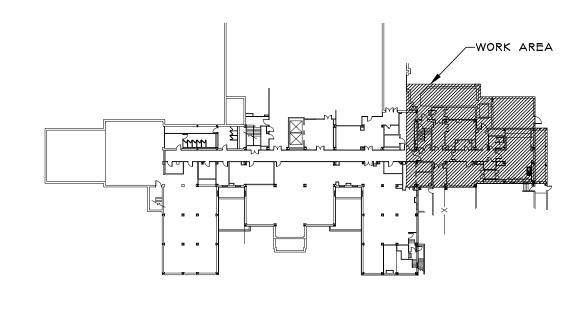
SHAFT-2 DUCTWORK PLANS	Project Title MORGUE RENOVATIO	NS		Proje
	Building Number 1	Checked SBG	Drawn NCB	DR

Location
SYRACUSE, NY

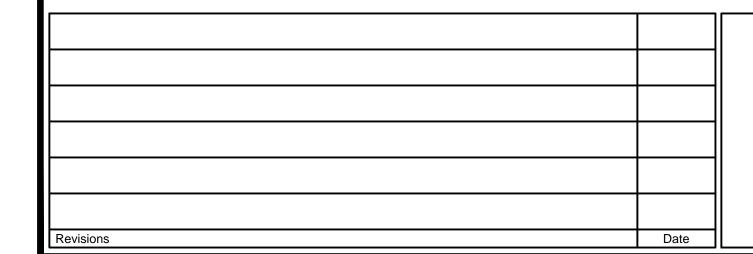










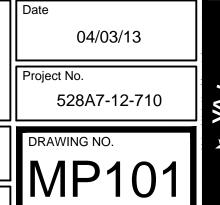


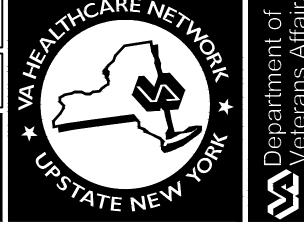
IPD Engineering
INTEGRATED PROJECT DELIVERY

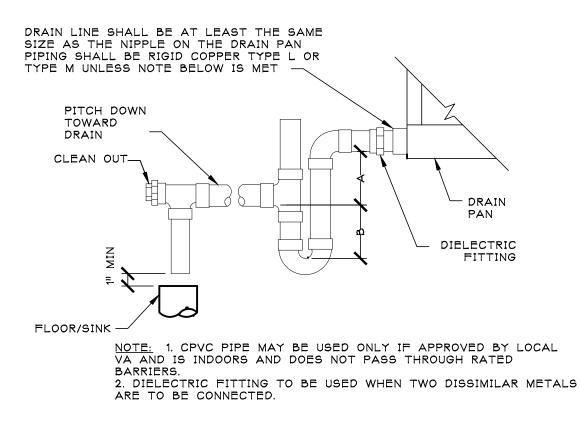
ONE WEBSTER'S LANDING
SYRACUSE, NEW YORK 13202
315.423.0185



PIPING PLANS	MORGUE RENOVAT	II i					
	Building Number 1	Checked SBG	Drawn NCB				
SA # 1134	Location SYRACUSE, NY						

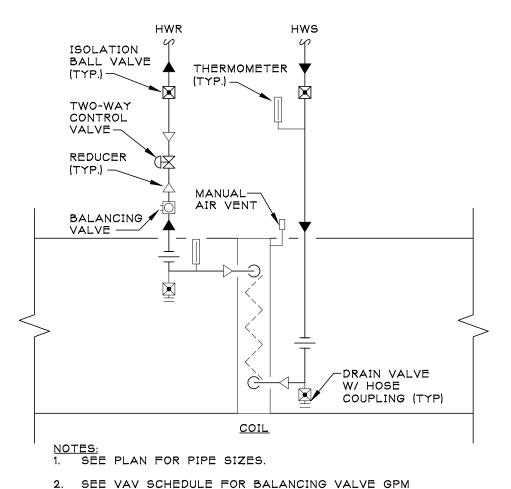






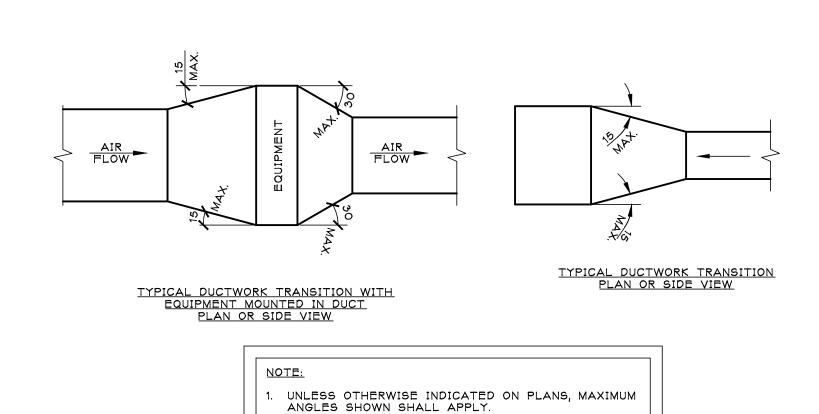
UNIT	TYPE	Α	В							
DRAW	THRU	2" [50mm] PLUS X	×							
BLOW	THRU	1" [25mm] MINIMUM	2X							
WHERE	WHERE X = STATIC PRESSURE IN PAN									

AIR HANDLING UNIT DRAIN TRAP DETAIL

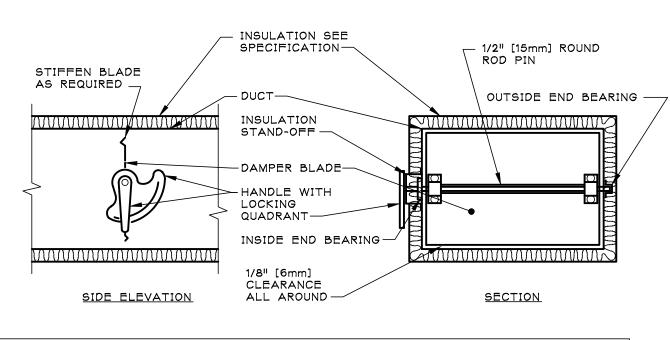


NOT TO SCALE

TYPICAL VAV PIPING DETAIL

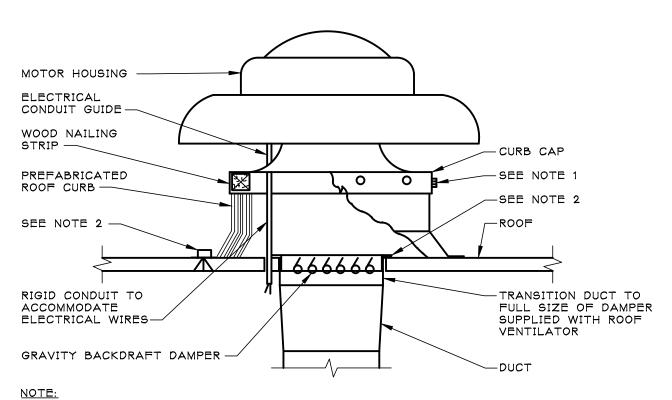


DUCTWORK TRANSITIONS (WITH EQUIPMENT MOUNTED IN DUCT)



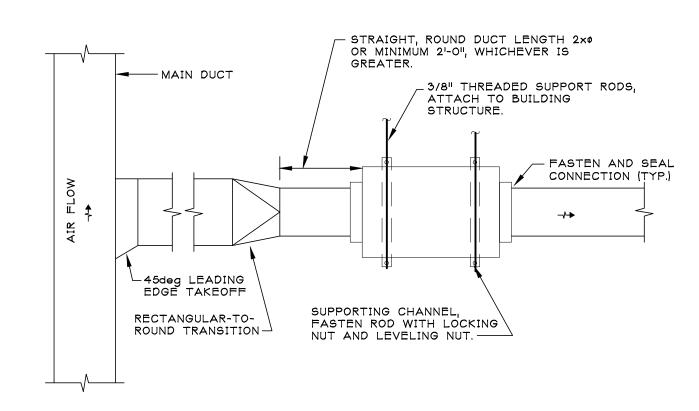
DELETE INSULATION STAND-OFF ON DUCTWORK WITHOUT EXTERIOR INSULATION. DETAIL SHOWS SINGLE BLADE DAMPER. DAMPER INSTALLATION SHALL BE SIMILAR FOR MULTI-BLADE DAMPERS & ROUND DAMPERS

VOLUME DAMPER DETAIL



- 1. SECURE CURB CAP TO WOOD NAILING STRIP WITH 3/8" [10mm] CADMIUM PLATED LAG BOLTS NOT OVER 12" [300mm] ON CENTER.
- 2. SECURE ROOF CURB, DUCTWORK AND DAMPER TO ROOF WITH EXPANSION BOLTS (CONCRETE ROOF) OR RUST RESISTANT BOLTS (METAL DECK AND BAR JOIST ROOF).
- 3. RUN ELECTRICAL LINES THROUGH CLEARANCE HOLE PROVIDED IN GRAVITY DAMPER, THEN THROUGH VENTILATOR ELECTRICAL CONDUIT GUIDE.
- 4. FLASH CURB TO ROOF, MAINTAIN ANY EXISTING WARRANTEES AND ENSURE A WEATHER PROOF SEAL.

POWER ROOF VENTILATOR DETAIL

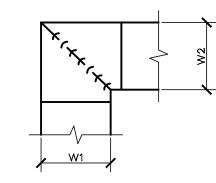


- 1. THE OPERATION OF VARIABLE AIR VOLUME TERMINAL BOX IS AFFECTED BY EXCESSIVE TURBULENCE ON THE ENTERING SIDE OF EACH TERMINAL BOX. THEREFORE, TERMINAL BOX MUST NOT BE INSTALLED TOO CLOSE TO MAIN DUCTS, ELBOWS AND FITTINGS. 2. WHEN MINIMUM UPSTREAM STRAIGHT DUCT CONNECTION TO TERMINALS AS INDICATED ABOVE CANNOT BE MAINTAINED, PROVIDE ORIFICE PLATE, STRAIGHTENING VANES OR OTHER DEVICE AS RECOMMENDED BY TERMINAL BOX MANUFACTURER AND SUBMIT TO
- 3. DDC PANELS & MOTORS FOR NEW VAV TERMINAL BOXES SHALL BE PROVIDED BY CONTROLS MANUFACTURER AND SHALL BE DELIVERED TO VAV BOX MANUFACTURER. DDC PANEL SHALL CONTAIN STEP DOWN TRANSFORMER (120V AC TO 24V AC) TO POWER CONTROL & MOTOR. BOX MANUFACTURER SHALL FACTORY MOUNT DDC CONTROLLER & MOTOR ON LEFT OR RIGHT HAND SIDE OF VAV BOXES TO SUIT FIELD CONDITION. VAV BOX MANUFACTURER WILL PROVIDE ALL SENSORS & DAMPER WITH LINKAGES.

ENGINEER FOR REVIEW PRIOR TO INSTALLATION.

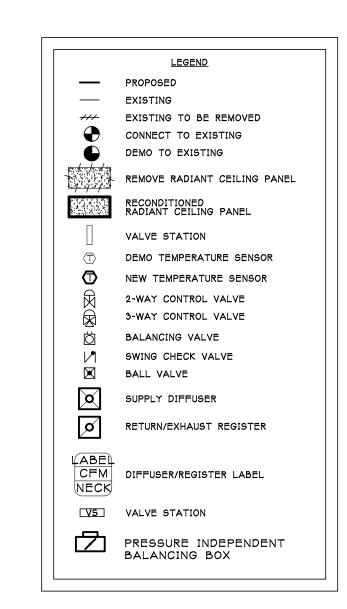
4. ARRANGE ACCESS TO PERMIT EASY FIELD BALANCE AND MAINTENANCE OF TERMINAL UNIT.

TYPICAL VAV BOX INSTALLATION DETAIL NOT TO SCALE



- NOTE: ALL VANE ELBOWS SHALL BE CONSTRUCTED AND INSTALLED AS DETAILED BY
- WHEN W1 DOES NOT EQUAL W2, VANE SHALL BE SINGLE THICKNESS VANE TYPE REGARDLESS OF W DIMENSION. 3. ALL SINGLE THICKNESS VANES SHALL HAVE A 2" [50mm] RADIUS, 1 1/2" [40mm]
- MAXIMUM SPACE BETWEEN VANES AND A 3/4" [20mm] TRAILING EDGE. 4. WHEN W EQUALS W2 AND W1 IS GREATER THAN 20" [500mm] VANES SHALL BE DOUBLE VANE TYPE.

DUCTWORK SQUARE VANE ELBOWS



ABBREVIATIONS ABOVE FINISHED FLOOR AIR HANDLING UNIT AIR SEPARATOR CHILLED BEAM CUBIC FEET OF AIR PER MINUTE CHWR CHILLED WATER RETURN CHWS CHILLED WATER SUPPLY CABINET UNIT HEATER EXHAUST AIR EXPANSION TANK FAN COIL UNIT FIN TUBE RADIATION GALLONS PER MINUTE HEAT EXCHANGER HEAT PUMP HOT WATER RETURN HOT WATER SUPPLY PRESSURE DROP RETURN AIR SECONDARY TERTIARY

CONDENSER WATER RETURN CONDENSER WATER SUPPLY EXHAUST AIR TEMPERATURE EXHAUST AIR CONSTANT VOLUME BOX ENTERING WATER TEMPERATURE

HIGH PRESSURE CONDENSATE HIGH PRESSURE STEAM LOW PRESSURE CONDENSATE LOW PRESSURE STEAM LEAVING WATER TEMPERATURE MIXED AIR TEMPERATURE PUMPED CONDENSATE PERIMETER RADIATION PACKAGED TERMINAL AIR CONDITIONER

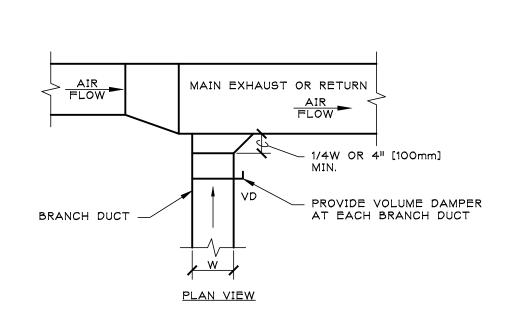
SUPPLY AIR TEMPERATURE SUPPLY AIR CONSTANT VOLUME BOX VARIABLE AIR VOLUME BOX VARIABLE FREQUENCY DRIVE VALVE STATION WALL MOUNTED RADIANT PANEL

- DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK INCLUDED IN THE CONTRACT. IT IS NOT NTENDED TO SPECIFY OR SHOW EVERY OFFSET, FITTING OR COMPONENT; HOWEVER, CONTRACT DOCUMENTS REQUIRE COMPONENTS AND MATERIALS WHETHER OR NOT INDICATED OR SPECIFICALLY SPECIFIED TO MAKE THE SYSTEMS BEING INSTALLED COMPLETE,
- CONTRACTOR SHALL FIELD VERIFY ALL LOCATIONS, DIMENSIONS AND ELEVATIONS PRIOR TO CONSTRUCTION.
- 3. ALL MATERIALS, EQUIPMENT, METHODS OF INSTALLATION, REMOVALS AND DISPOSAL SHALL BE IN ACCORDANCE WITH THE STANDARDS, REGULATIONS, CODES, ORDINANCES, AND LAWS OF LOCAL, STATE, AND FEDERAL GOVERNMENTS, AND OTHER AUTHORITIES THAT HAVE LAWFUL JURISDICTION.
- 4. PERFORM WORK, PROVIDE MATERIALS AND EQUIPMENT FOR SYSTEMS SHOWN, SPECIFIED AND DESCRIBED ON DRAWINGS, COMPLETELY COORDINATE ALL TRADES OF THIS CONTRACT AND PROVIDE COMPLETE AND FULLY FUNCTIONAL INSTALLATION. ALL WORK IN THIS SET TO BE COMPLETED UNDER THIS CONTRACT, UNLESS OTHERWISE INDICATED.
- 5. PROTECT ALL EXISTING AND NEW BUILDING ELEMENTS FROM DAMAGE. CONTRACTOR SHALL RESTORE ALL DAMAGED ELEMENTS TO ORIGINAL
- 6. WORK SHALL BE EXECUTED IN A WORKMANLIKE MANNER AND SHALL PRESENT NEAT, RECTILINEAR APPEARANCE WHEN COMPLETED. MAINTAIN MAXIMUM HEAD ROOM AT ALL TIMES. DO NOT RUN PIPES, DUCTS, AND CONDUIT EXPOSED UNLESS SHOWN AND NOTED TO BE EXPOSED ON DRAWINGS.
- MATERIALS AND EQUIPMENT SHALL BE NEW AND INSTALLED ACCORDING TO MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS. MAINTAIN MANUFACTURER'S EQUIPMENT
- 8. CONTRACTOR IS RESPONSIBLE FOR ALL WORK RELATED TO ISOLATING, SHUTTING DOWN, DRAINING, FILLING AND TESTING SYSTEMS TO ALLOW FOR COMPLETION OF WORK INTERRUPTIONS TO EXISTING SERVICES AND SYSTEMS SHALL BE AS SHORT AS POSSIBLE AND AT A TIME AND DURATION APPROVED BY THE OWNER AND LITHITY AS APPLICABLE. INCLUDE ALL PREMIUM TIME ASSOCIATED WITH INTERRUPTIONS. ALL SYSTEM INTERRUPTIONS SHALL BE SCHEDULED
- WITH OWNER, UTILITY AND COORDINATED WITH OTHER TRADE WORK. 9. ALL EQUIPMENT PIPING, WIRING, INSULATION ETC. INSTALLED IN HVAC AIR PLENUM SPACES SHALL MEET CODE REQUIREMENTS FOR SMOKE AND COMBUSTIBILITY.
 - 10. SEAL ALL PENETRATIONS THROUGH FIRE RATED WALLS, PARTITIONS AND FLOORS WITH UL RATED MATERIALS/METHODS EQUIVALENT TO FIRE RATING OF ASSEMBLY.
- . PROVIDE PROPER ACCESS TO EQUIPMENT THAT REQUIRES INSPECTION, REPLACEMENT OR REPAIR. ACCESS PANELS/DOORS SHALL BE A MINIMUM OF 12"x12", UNLESS OTHERWISE NOTED.
- 12. DO NOT SUPPORT EQUIPMENT FROM SUSPENDED CEILINGS. ALL SUPPORT SHALL BE FROM BUILDING STRUCTURE OR FROM CEILING SUSPENSION SYSTEM WHICH HAS BEEN REINFORCED. SUPPORTS SHALL

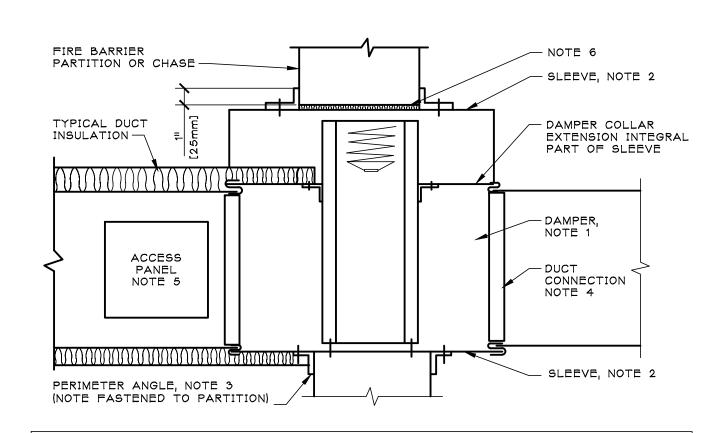
BE SELECTED AND INSTALLED TO PROVIDE A VIBRATION FREE

- 13. PRIOR TO CONSTRUCTION, ENLIST A CERTIFIED TESTING & BALANCING AGENCY TO DETERMINE BASELINE AIR AND WATER FLOW VALUES FOR EXISTING AIR HANDLING UNIT 'AHU-30'. PROVIDE A WRITTEN REPORT OF THE FINDINGS TO
- 14. THESE GENERAL NOTES APPLY TO ALL DRAWINGS ASSOCIATED WITH THIS TRADE.

THE COR AND ENGINEER.

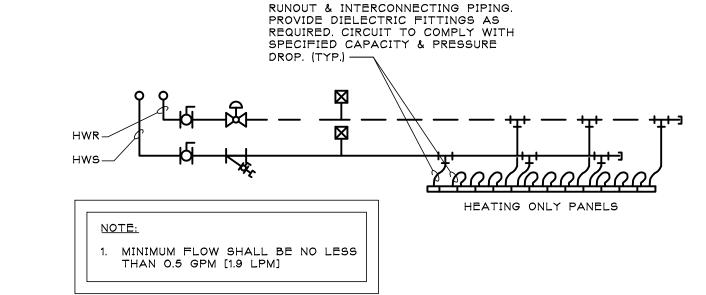


EXHAUST BRANCH DUCTWORK
SCALE: NONE

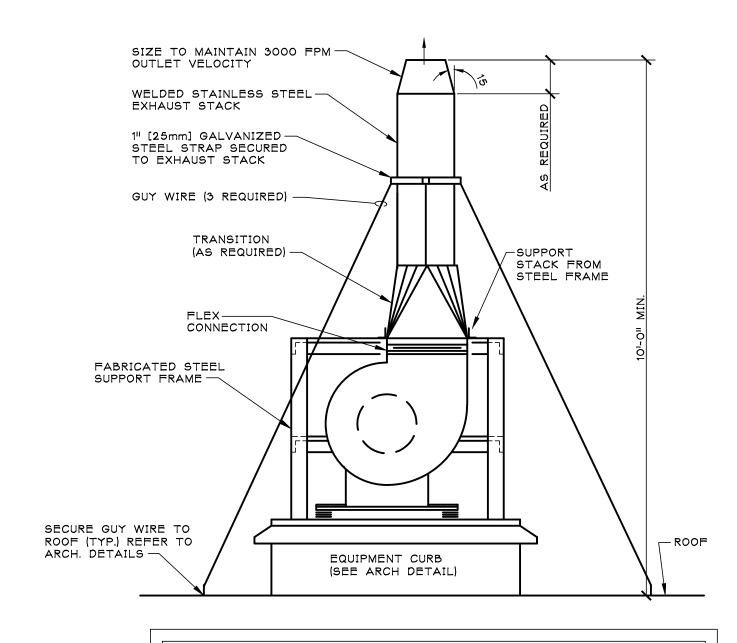


- A VERTICAL DAMPER IS SHOWN. HORIZONTAL DAMPER INSTALLATION, IS SIMILAR. FOLLOW DAMPER MANUFACTURER'S INSTRUCTIONS, INCLUDING FASTENER OPTIONS AND GAGES FOR SLEEVE AND PERIMETER ANGLES. FIRE DAMPERS MUST BE INSTALLED IN THE PARTITION OR FLOOR AND NOT OUTSIDE THE PENETRATION.
- 2. GALVANIZED SLEEVE: GAGE NOT LESS THAN CONNECTING DUCT. FASTEN SLEEVE TO DAMPER FRAME AND TO PERIMETER ANGLES.
- PERIMETER ANGELS: GALVANIZED STEEL, NOT LESS THAN 1 1/2"x1 1/2" [40x40mm], 14 GAGE, TO PROVIDE 1 [25mm] MINIMUM OVERLAP OF OPENING ON ALL 4 SIDES. 4. BREAKAWAY DUCT CONNECTION: CONTRACTOR'S OPTION OF TYPES SHOWN IN SMACNA.
- 5. ACCESS PANELS: SIZE AND LOCATION TO PERMIT SERVICING THE FUSIBLE LINK OR 6. PROVIDE 1/4" TO 1/2" [6 TO 15mm] CLEARANCE ON HEIGHT AND WIDTH, FILL OPEN SPACE WITH ROCK WOOL FIRESTOP FIBER.
- ALL DUCT WORK RISERS WHICH ARE RUN EXPOSED, SUCH AS THRU ATTIC FLOORS AND MECHANICAL ROOM FLOORS, SHALL BE PROVIDED WITH 3" [75mm] HIGH CONCRETE CURB AROUND OPENING FOR DUCT.

SECTION THRU FIRE DAMPER INSTALLATION



HYDRONIC RADIANT CEILING PANELS - PIPING CONNECTIONS



FABRICATED STEEL FRAME FROM MINIMUM 1¾"X1¾" STEEL ANGLE. FRAME TO BE OF WELDED CONSTRUCTION. GRIND ALL JOINTS SMOOTH SECURE FRAME AND FAN TO EQUIPMENT CURB PROVIDED GUY WIRES AND COORDINATE ALL ROOFING WORK WITH ARCHITECTURAL DETAILS.

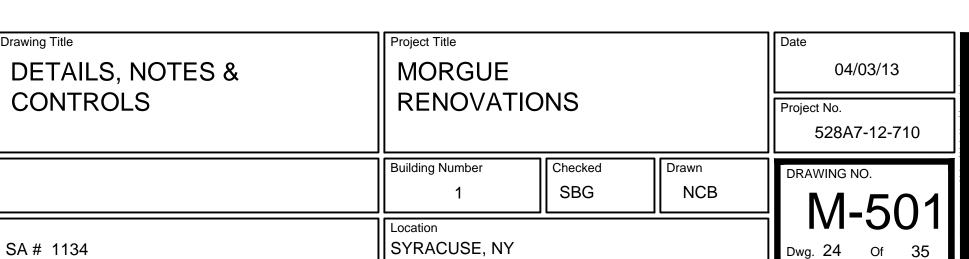
EXHAUST STACK DETAIL

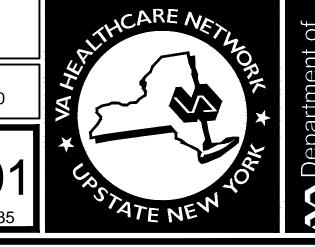
IPD: Engineering INTEGRATED PROJECT DELIVERY

ONE WEBSTER'S LANDING SYRACUSE, NEW YORK 13202 315.423.0185

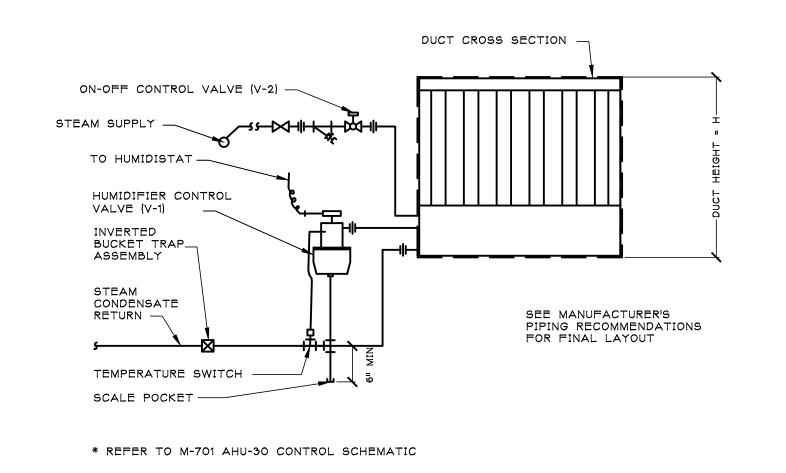
IPD PROJECT No: 12-7304-8



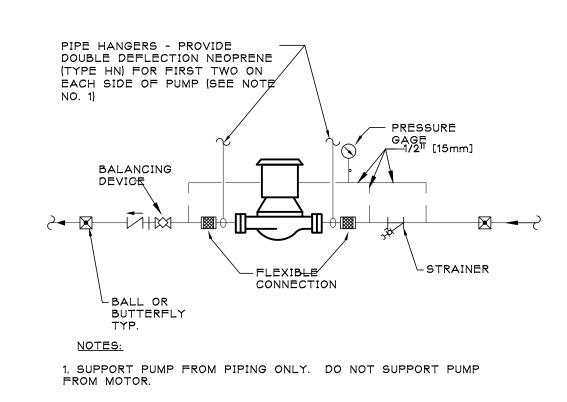




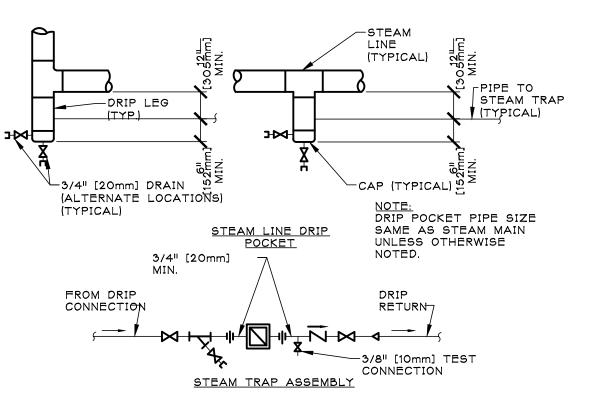




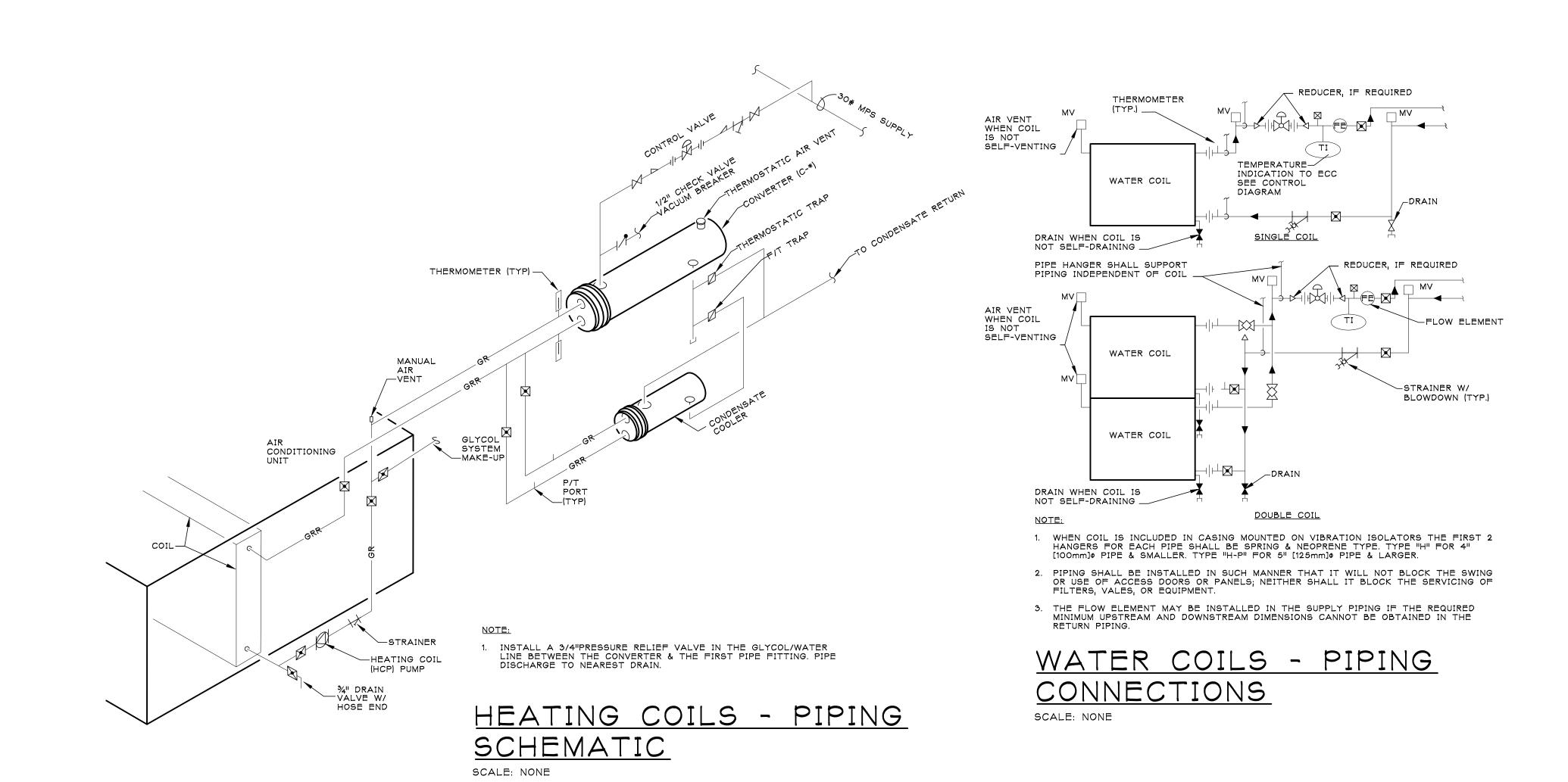
HUMIDIFIER PIPING SCHEMATIC



INLINE PUMPS - CONNECTIONS SCALE: NONE



STEAM LINE DRIP POCKET STEAM TRAP ASSEMBLY SCALE: NONE



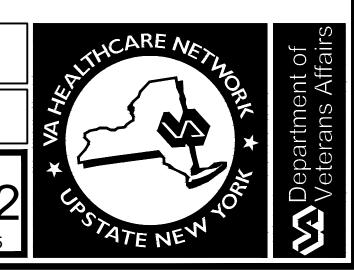




IPD PROJECT No: 12-7304-8



ILS, NOTES &	Project Title MORGUE			Date 04/03/13	
ROLS	RENOVATIO		Project No. 528A7-12-710		
	Building Number 1	Checked SBG	Drawn NCB	DRAWING NO. M-502	
34	Location SYRACUSE, NY			Dwg. 25 Of 35	



	RADIANT PANEL (RP) SCHEDULE										
TAG	SIZE	GPM	MWT (F)	RATED CAPACITY (BTU/SF)	BASIS OF DESIGN						
RP	2x4	0.5	170	190	AEROTECH LAY-IN FORMED METAL PANELS						

	GRILLE, REGISTER & DIFFUSER SCHEDULE												
TAG	DESIGN BASIS	DESCRIPTION	MOUNTING TYPE	MODEL	BLOW PATTERN	FACE SIZE (IN)	REMARKS						
SD-1	PRICE	LOUVERED FACE	T-BAR	SCD	4-WAY	24x24	1,2,3						
SD-2	PRICE	LOUVERED FACE	T-BAR	SCD	4-WAY	12x12	1,2,3						
LFD-1	PRICE	PERFORATED FACE	T-BAR	LFD	LAMINAR	48x24	1,2,3						
EG-1	PRICE	PERFORATED FACE	T-BAR	PDDR	-	24x24	1,3						
TG-1	PRICE	PERFORATED FACE	T-BAR	PDDR	-	24x24	1,3						

REMARKS

- 1. COORDINATE FRAME AND MOUNTING TYPE WITH INDIVIDUAL APPLICATION AND LOCATION.
- 2. PROVIDE WITH OPPOSED BLADE DAMPER, ADJUSTABLE WITHOUT DISASSEMBLY.
- 3. UNIT SHALL BE CONSTRUCTED OF STEEL; FINAL COLOR SELECTION BY ARCHITECT FROM MANUFACTURE'S STANDARD COLOR PALETTE

					INSU	LATION SCH	EDULE						
		INICI	ULATION CLASS	(0)	1.4	ACKETING CLASS	(b)	THICKNESS (IN)					
ГҮРЕ	EQUIPMENT OR	11430	ULATION CLASS	(a)	JF	CRETING CLASS	(6)	NOMINAL PIPE SIZE (IN)			DUCTWORK		
	SYSTEM SERVED	INTERIOR CONCEALED	INTERIOR EXPOSED	EXTERIOR	INTERIOR GENERAL	EQUIPMENT ROOMS	EXTERIOR	.5 - 1.5	2 - 4	5 - 6	8 & UP	(c)	
Α	RS, RL	FE	FE	FE	0	0	4	1.5	1.5	1.5	1.5		
_	0.000	FG			1			1.5	1.5	1.5	1.5		
В	CHWS, CHWR		FE		0	4		1.5	1.5	1.5	1.5		
				UR			6	1.5	1.5	1.5	1.5		
С	DCW, COOLING COIL	FE			0			0.5	0.5	0.5	0.5		
	CONDENSATE		FE			4		0.5	0.5	0.5	0.5		
D	DHW, DHWR	FG			1			1	1	1.5	1.5		
	DHW, DHWK		FG			1		1	1	1.5	1.5		
		FG			1			1.5	2	2	2		
Е	HWS, HWR		FG		1	1		1.5	2	2	2		
				UR			6	1.5	2	2	2		
		FG			1			1.5	3	3	3		
F	LPS, LPC		FG		1	1		1.5	3	3	3		
				UR			6	1.5	3	3	3		
		FG			1			1.5	3	3	3		
G	MPS, MPC		FG		1	1		1.5	3	3	3		
				UR			6	2	3	3	3		
		FG (d)			2							1.5(g)	
Н	DUCTWORK		FG (f)		2	1						2 (f)(g)	
				UR(e)			7					2 (h)	
(a)	FG FIBROUS GLA	l ASS	(h) 0 NONE		(c)	SUPPLY AIR		(f)				
()	FE FLEXIBLE ELA		(-	1 ALL SERV	ICE	(-)	OUTSIDE AIR		()	EXCEPT SU	PPLY AIR WITHIN	CONDITIONED SPA	
	UR URETHANE	- · - · · · ·		2 ALUMINU			MIXED AIR						
	CS CALCIUM SIL	ICATE		4 POLYVIN'			RETURN AIR		(g)	INIQI II ATE F	YHALIST AID 4517	O" FROM EXTERIOR	
	FR FIRE RATED	/ · · <u>-</u>		5 STAINLES	SS STEEL		(3)	PENETRATI		J FROW EXTERIOR			
				6 ALUMINU 7 EPDM	M	(d)	BLANKET		(i)	TWO LAYER	RS, 3 IN TOTAL		
						(e)	RIGID BOARD						

	EXHAUST FAN (EF) SCHEDULE												
				T.S.P.					MOTOR				
TAG	DESCRIPTION	LOCATION	CFM	(IN W.G.)	DRIVE	RPM	HP	ВНР	VOLT/ PHASE	INVERTER DUTY	DESIGN OF BASIS F	REMARKS	
EF-30	UTILITY SET	SHAFT 2 ROOF	3200	3.5	BELT	1800	5	4.5	208/3	YES	TCF MODEL 122 FCV	1,2,3,4,5	
EF-912	ROOF VENTILATOR	BL-20 ROOF	1200	0.5	DIRECT	1300	.2	0.25	120/1	NO	LOREN COOK ACED	6	

REMARKS:

- 1. PROVIDE VARIABLE FREQUENCY DRIVE WITH ELECTRONIC BY-PASS FULLY COORDINATED WITH DIRECT DIGITAL CONTROLS REQUIREMENTS.
- 2. PROVIDE FAN VIBRATION ISOLATOR RAILS (SF-2 SPRINGS), FLEXIBLE INLET DUCT CONNECTION, SHAFT SEAL, BOLTED ACCESS DOOR AND DRAIN PAN AT BOTTOM OF HOUSING.
- 3. PROVIDE WITH 10' STACK AND EXIT CONE WITH 3 GUY-WIRE SYSTEM ANCHORED TO ROOF.
- 4. PROVIDE BAKED PHENOLIC EPOXY COATING ON ALL COMPONENTS IN CONTACT WITH THE AIR STREAM. MOTOR SHALL BE ISOLATED FROM THE EXHAUST.
- 5. PROVIDE WITH OSHA WEATHER COVER.
- 6. PROVIDE WITH COMBINATION MOTOR STARTER WITH THERMAL OVERLOAD PROTECTION, ALUMINUM BACKDRAFT DAMPER, AND BIRD SCREEN.

	HYDRONIC CABINET UNIT HEATER (CUH) SCHEDULE													
TAG	LOCATION / AREA SERVED	HEATING OUTPUT (MBH)	FLOW RATE (GPM)	PRESSURE DROP (FT WC)	ÒY VÁÇIØD	WATER TEMP. ÖÜUÚÁÇØD		MOUNTING RRANGEMEN	POWER (VOLTS/ T PHASE/HZ)	AMP DRAW	BASIS OF DESIGN	REMARKS		
UH-1	CORRIDOR 21	23.5	2.5	0.39	180	20	330	WALL	115/1/60	0.8	STERLING MODEL FS	1,2,3,4,5,6,7		
UH-2	VESTIBULE 24	23.5	2.5	0.39	180	20	330	WALL	115/1/61	8.0	STERLING MODEL RW	1,2,3,4,5,6,7		

REMARKS:

- 1. PROVIDE LINE-VOLTAGE THERMOSTAT (WHITE-ROGERS 176-6, OR EQUAL).
- 2. ÚÜUXÕÖÒÁDEĴWOEĴVOEVÁ/UÁÚÜÒXÒÞVÁØOEÞÁJÚÒÜŒVOJÞÁÓÒŠUYÁFG€%ØÁÒÞVÒÜŒÞŐÁYŒVÒÜÁ/ÒTÚÒÜŒVMÜÒÈ
- 3. PROVIDE CONTROL VALVE, BALANCING VALVE, ISOLATION VALVES, PIPE UNIONS, AND AIR VENT.
- 4. FINISH SHALL BE BAKED ENAMEL, COLOR TO BE SELECTED BY OWNER.
- 5. HVAC CONTRACT TO FURNISH DISCONNECT WITH THERMAL OVERLOAD PROTECTION, TO BE INSTALLED BY ELECTRICAL CONTRACT.
- 6. PROVIDE ALL NECESSARY BRACKETS AND SUPPORTS FOR MOUNTING OF UNIT. FINISH TO MATCH UNIT HOUSING.
- 7. HVAC CONTRACT SHALL FURNISH AND INSTALL UNIT AND ALL CONTROL EQUIPMENT, INCLUDING SENSORS, LOW VOLTAGE WIRING AND CONDUIT. LINE VOLTAGE WIRING BY ELECTRICAL CONTRACT

	SUPPLY CONTROL VALVE (SCV) SCHEDULE														
				VAV BOX				НО	T WATER TE	RMINAL HEA	T COIL				
TAG	ASSOC. UNIT	AREA SERVED	OCCUPIED CFM	UNOCCUPIED CFM	NECK SIZE (IN)	LOAD (MBH)	ÒY VÁÇO F)	ŠY VÁÇO F)	ÒŒVÁÇÁØD	ŠŒ/ÁÇÁØD	FLOW RATE (GPM)	MAX WATER PD (FT WC)	REMARKS		
SCV-	1 AHU-30	AUTOPSY AREA	1800	900	16	24.3	180	160	55	80	2.4	5.0	1,2,3,4		
SCV-	2 AHU-30	SUPPORT AREA	1275	1275	16	34.4	180	160	55	80	4.0	5.0	1,2,3,4		

REMARKS:

- 1. PROVIDE AIRFLOW MONITORING.
- 2. PROVIDE HIGH POINT AIR VENT AND HOSE END DRAIN VALVE FOR EACH WATER COIL.
- 3. PROVIDE INSULATED ACCESS DOOR WITHIN UNIT FOR INSPECTION OF DAMPER AND COIL.
- 4. FURNISH AND INSTALL VAV UNIT, ALL CONTROL EQUIPMENT (INCLUDING ACTUATOR, SENSORS & LOW VOLTAGE WIRING), PIPING, VALVES AND SUPPORTS.

	HYDRONIC HEATING PUMPS (CP)														
TAG	EQUIPMENT / AREA SERVED	HP	MOT VOLTS	FOR PHASE	HZ	MOTOR RPM	FLUID	FLOW (GPM)	HEAD (FT WC)	MOUNTING TYPE	BASIS OF DESIGN	REMARKS			
LICE 20	LIOT OLVOOL OIDCUILATING DUMP	пР		PHASE	60		250/ D.C. DV.VOLLIME		,	INLINE, CLOSE COUPLED	BELL & GOSSETT	12245			
HCP-30	HOT GLYCOL CIRCULATING PUMP	.5	208	3	60	1725	35% P.G., BY VOLUME 35		20.0	incline, CLOSE COOPLED	SERIES 80	1,2,3,4,5			

REMARKS:

- 1. FURNISH AND INSTALL MAGNETIC MOTOR STARTER WITH 24V DRY CONTACT AND DISCONNECT WITH THERMAL OVERLOAD PROTECTION.
- IRON CONSTRUCTION WITH BRONZE IMPELLER AND BRONZE SLEEVE.
- 2. IRON CONSTRUCTION WITH BRONZE IMPELLER AND BRONZE SLEEVE.

 3. SEAL SHALL BE GRAPHITE LOADED SINTERED SILICON CARBIDE (SiC) ON THE ROTATING AND STATIONARY FACES WITH EPR ELASTOMER SECONDARY SEALING ELEMENTS.
- 4. ÜCEYÒÖÁRUÜÁFGÍÁÚÙÓFGYOT WTÁY UÜSOPŐÁUÜÒÙÙWÜÒÁGEÞÖÁRGÍ »RÁT CEYOT WTÁUÚÒÜCEYOPŐÁYÒT ÚÒÜCEYWÜÒÈ
- 5. HVAC CONTRACT SHALL FURNISH AND INSTALL UNIT AND ALL CONTROL EQUIPMENT, INCLUDING SENSORS, LOW VOLTAGE WIRING AND CONDUIT. LINE VOLTAGE WIRING BY ELECTRICAL CONTRACT.

				SHELL & TUBE HEAT EXCHANGER (HEX) SCHEDULE														
				SHELL SIDI	E (STEAM)													
TAG	LOCATION	SERVICE	HEAT LOAD (MBH)	ENTERING STEAM PRESSURE (PSI)	STEAM & CONDENSATE PIPE SIZES (IN)	FLUID	FLOW (GPM)	ENTERING WATER TEMP. QØD	LEAVING WATER TEMP. ÇØD	PRESSURE DROP (FT WC)	INLET & OUTLET PIPE SIZES (IN)	REMARKS						
C-30	B-20	AHU-30	350	30	1-1/4	35% P.G., BY VOLUME	35	160	180	2.2	1-1/2	1,2,3,4						

REMARKS:

- 1. TUBES SHALL BE 3/4" O.D. COPPER WITH 0.035" WALL THICKNESS.
- 2. ÖÒÙÕÞÁÚÜÒÙÙWÜÒÆÁVÒT ÚÒÜŒVWÜÒÁÙPŒŠŠÁÓÒÆTÍ €ÁÚÙÕÆÁHÏ Í ÁØÈ
- HEAD SHALL BE BONNET-TYPE, FABRICATED STEEL. BAFFLES AND SHELL SHALL BE STEEL.
 HEAT EXCHANGER TO BE DESIGNED, CONSTRUCTED AND STAMPED PER ASME SECTION VIII, DIVISION 1.

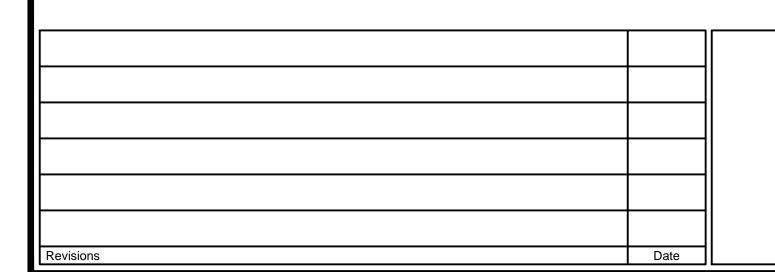
															AIR H	ANDLING	UNIT (AHU) SCHEDULE												
	SUPPLY FAN							HEATING COIL						COOLING COIL						STEAM HU	UMIDIFIER	FILT	ERS							
TAG	LOCATION AREA SERVED	SUPPLY AIR	DESIGN O.A	E.S.P.	EAN DDIVE	FAN TYPE	FAN N	MOTOR CAI	PACITY	FACE	AIR COND	TIONS		FLU	ID CONDITIONS		CAPACITY	FACE VELOCITY	, AIR	CONDITIONS		FLUID CONDITION	NS	AIR CONDITIONS	STEAM CONDITIONS	TRAP PRE	FINAL	ASSOCIATED ELE	С	REMARKS
		FLOW (CFM)	(CFM)	(IN. W.G.)	FAN DRIVE	FAN ITPE	RPM	(HP) (I	MBH) (I	FT/SEC) ÒÞVÁÖ	ÓÁÇIØD ŠXÕÁÖ	P. DROF (IN H2O	TYPE	FLOW (GPM)	ÒÞVÁQXØD ŠXÕÁQX	P. DRO (FT H20	P (MBH) D)	(FT/SEC)	ENT DB Ç∕ØD	LVG DB P. DROP QAD (IN H2O)	TYPE	FLOW (GPM) OPVÁQX	ŠXÕÁÇØD P. DROP (FT H2O)	EDB / EWB LDB / LWB (DEG. F)	PSI LBS/HR	(LBS/HR) FILTERS	FILTERS			
AHU-30	B-20 MORGUE	3,250	3,250	3.50	BELT	FC	1500	5.0 2	295.9	428 -5	.0 80.	0.16	35% PG	32.0	160 140	0.5	242.6	428	90.0	76.0 0.62	WATER	50.0 45	55 2.9	72/0 72/60	30 120	15 MERV-7	MERV-13	EF-30, C-30, HCP-30 208V/3P	/60HZ	1,2,3,4,5,6

DEMADKS:

- 1. FAN MOTOR SHALL BE PREMIUM EFFICIENCY, OPEN DRIP PROOF, INVERTER DUTY TYPE SUITABLE FOR VARIABLE FREQUENCY DRIVE.
- 2. PROVIDE VARIABLE FREQUENCY DRIVES WITH ELECTRONIC BY-PASS AND FULLY COORDINATED WITH DIRECT DIGITAL CONTROLS REQUIREMENTS.
- 3. PROVIDE AND MOUNT A DISCONNECT ON THE UNIT IN A NEMA 12 RATED ENCLOSURE FOR EACH FAN IN THE AHU. DISCONNECT TO INCLUDE THERMAL OVERLOAD PROTECTION. WIRING TO EACH DISCONNECT AND FROM EACH DISCONNECT TO THE FAN MOTOR VFD TO BE BY THE ELECTRICAL CONTRACT.
- PROVIDE AND MOUNT A DISCONNE
 PROVIDE TWO SETS OF FILTERS.
- 5. PROVIDE SPRING ISOLATORS ON FANS. SPRING ISOLATORS SHALL BE SELECTED TO ACCOUNT FOR VARIABLE FAN SPEED OPERATION AND SHALL CONTROL VIBRATION AT ALL OPERATING SPEEDS.
- 6. HVAC CONTRACT SHALL FURNISH AND INSTALL UNIT AND ALL CONTROL EQUIPMENT, INCLUDING SENSORS, LOW VOLTAGE WIRING AND CONDUIT. LINE VOLTAGE WIRING BY ELECTRICAL CONTRACT.

DRAWING NOTES:

1. MANUFACTURERS AND MODEL NUMBERS LISTED FOR HVAC EQUIPMENT, DIFFUSERS, RADIANT PANELS, ETC. ARE PROVIDED AS A BASIS OF DESIGN. EQUIVALENT HVAC EQUIPMENT, AT HAT PANELS, ETC. FROM OTHER MANUFACTURERS, THAT MEET PERFORMANCE AND SPECIFICATION REQUIREMENTS, ARE ACCEPTABLE.





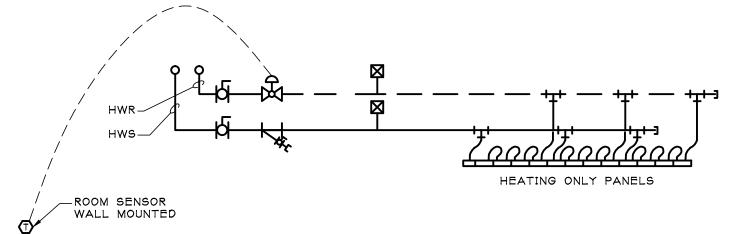
IPD PROJECT No: 12-7304-8

ONE WEBSTER'S LANDING SYRACUSE, NEW YORK 13202 315.423.0185



	Building Number	Checked	Drawn NCB	528A7-12-710 DRAWING NO.
HEDULES	MORGUE RENOVAT	IONS		04/03/13 Project No.
Title	Project Title			Date

SYRACUSE, NY



PROVIDE SEQUENCE OF OPERATION FOR RADIATION BY DDC SYSTEM:

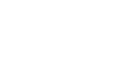
- INDIVIDUAL SPACE TEMPERATURES SHALL BE MAINTAINED BY MODULATING THE HWR VALVE
- 2. WHEN SPACE TEMPERATURE IS SATISFIED HWR VALVE
- 3. IN THE EVENT OF A POWER LOSS HWR WILL FAIL CLOSED
- 4. HEATING SETPOINT IS 70F (ADJ).

AUTOPSY ROOM

PRESSURE

CONTROLLER

RADIANT PANEL PIPING SCHEMATIC PIPING SCHEMATIC - CONTROL DIAGRAM



SUPPLY CONTROL VALVE TERMINAL

UNIT /REHEAT -

DEDICATED

SYSTEM

AUTOPSY AND HOLDING ROOMS. PRESSURE CONTROL IS ACCOMPLISHED BY MODULATING THE EXHAUST CONTROL VALVE (ECV) TO ADJUST THE VOLUME OF EXHAUST AIR FROM THE ASSOCIATED SPACE. SUPPLY AIR IS HELD CONSTANT BY SUPPLY CONTROL VALVE (SCV) SUBJECT TO INDEXING

BETWEEN OPERATING MODES. B. PROVIDE THROUGH THE WALL DIFFERENTIAL SENSING BETWEEN PATIENT ROOM AND ADJACENT CORRIDOR C. SYSTEM WILL INDEX BETWEEN TWO OPERATING MODES USING OCCUPANCY SENSORS AND/OR SIGNAL FROM DOOR CONTACTS AND PRESSURE SENSORS.

A. MONITOR AND CONTROL NEGATIVE PRESSURE OF

PROVIDE SEQUENCE OF OPERATION FOR MAINTAINING AND MONITORING NEGATIVE PRESSURE FOR MORGUE BY DDC SYSTEM

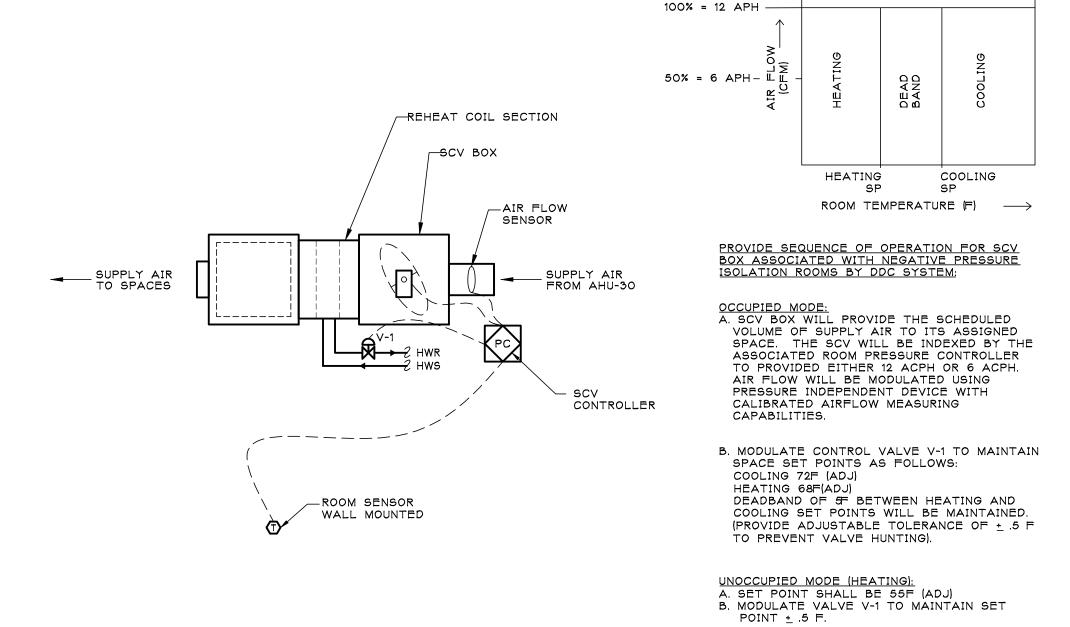
- UNOCCUPIED MODE: ECV SHALL MODULATE TO MAINTAIN -0.005 (ADJ) PRESSURE DIFFERENTIAL, SUPPLY CONTROL VALVE (SCV) SHALL PROVIDE 6 ACPH AS SCHEDULED. - OCCUPIED MODE - ECV SHALL MODULATE TO

MAINTAIN -0.01 (ADJ) PRESSURE DIFFERENTIAL. SUPPLY CONTROL VALVE (SCV) SHALL PROVIDE 12 - ALARM - INDICATE AN ALARM IF SYSTEM FAILS TO MAINTAIN DIFFERENTIAL PRESSURE SET POINT AFTER AN ADJUSTABLE DELAY TO

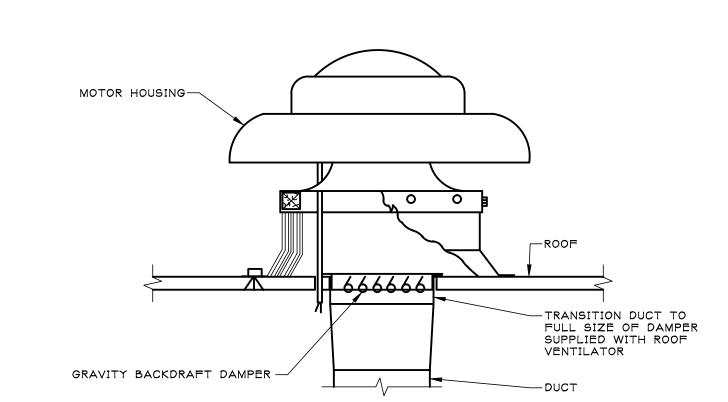
ALLOW FOR DOORS TO BE OPENED AND CLOSED (60 SECONDS ADJUSTABLE). - ADJUST SUPPLY AIR TO LAG EXHAUST ADJUSTMENTS TO MAINTAIN NEGATIVE PRESSURE AT ALL TIMES. - SYSTEM TO RETURN TO IN-ACTIVE MODE HOURS (ADJUSTABLE) AFTER OCCUPANCY SENSORS CEASES TO DETECT ACTIVITY. LOCAL AUDIBLE AND VISUAL SIGNAL AND REMOTE INDICATION TO CENTRAL MONITORING POINT. PROVIDE A 60 SECOND (ADJ.) DELAY FOR ALARM CONDITIONS TO PREVENT NUISANCE TRIPS WHEN DOORS ARE OPENED AND CLOSED AS SENSED BY

DOOR CONTACT SWITCH. PROVIDE LOCAL AUDIBLE E. AIR CONTROL VALVES TO BE LINEAR ACTING F. ROOM PRESSURE CONTROL TO BE TRIATEK FMS-1630 OR APPROVED EQUAL. EXHAUST CONTROL

VALVE (ECV) TO BE TEK-AIR AV2000 OR APPROVED

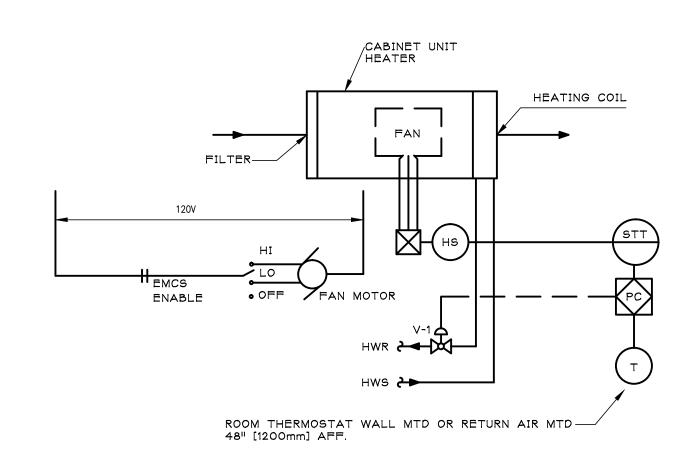


SUPPLY AIR CONTROL VALVE (SCV) TERMINAL UNIT W/REHEAT - CONTROL DIAGRAM



1. COOLING: WHEN ROOM TEMPURATURE RISES ABOVE COOLING SET POINT (80F ADJUSTABLE) OPEN OUTSIDE AIR DAMPERS AND RUN EXHAUST FANS CONTINUOUSLY. 2. MONITOR STATUS OF FAN. ALARM IF FAN FAILS TO START OR ROOM TEMPERATURES EXCEEDS

EXHAUST FAN (EF-912) CONTROLS

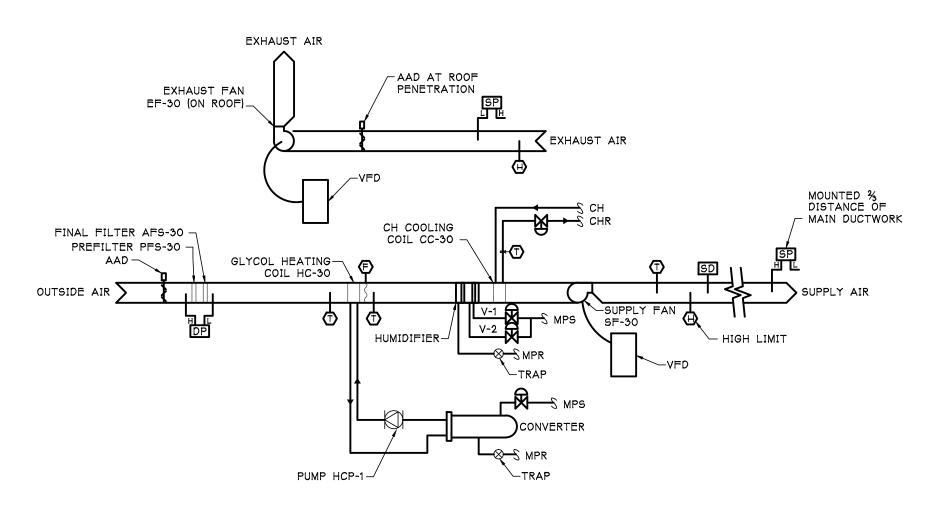


ALLOW LOCAL FAN SPEED ADJUSTMENT.

HOT WATER CABINET UNIT HEATER SEQUENCE 1. CABINET HEATER SHALL OPERATE ON A SCHEDULE AS SET BY THE ECC. FAN STATUS SHALL BE MONITORED AND AN ALARM MESSAGE GENERATED IN THE EVENT THE UNIT FAILS TO RUN. THE ROOM TEMP SETPOINT WILL BE 74 (ADJ). THE HOT WATER VALVE WILL BE ENABLED AS REQUIRED TO MAINTAIN SPACE TEMP SETPOINT. HI/LO/OFF SWITCH WILL

CABINET UNIT HEATER CONTROLS

NEGATIVE PRESSURE MORGUE MONITORING AND EXHAUST CONTROL VALVE (ECV) AND SUPPLY CONTROL VALVE (SCV) CONTROL DIAGRAM



REPLACE ALL EXISTING PNEUMATICS DEVICES WITH ELECTRONIC. EXISTING SENSORS MAY BE RE-USED. ANY DEVICE BEING RE-USED MUST BE RE-CALABRATED AND DOCUMENTED IN WRITING.

AHU-30 & EF-30 FLOW DIAGRAM

PROVIDE SEQUENCE OF OPERATION FOR AHU-30 AND EF-30

- DAMPERS OPEN OUTSIDE AIR AND EXHAUST AIR DAMPERS TO FULLY
- SUPPLY FAN AND EXHAUST FANS RUN CONTINUOUSLY ONCE END SWITCHES ARE PROVED. MODULATED SPEED OF THE SUPPLY AND EXHAUST FANS USING VARIABLE FREQUENCY DRIVES. MAINTAIN SYSTEM STATIC PRESSURE SET POINTS. LOCATE STATIC PRESSURE SENSOR
- DISCHARGE TEMPERATURE MAINTAIN A SUPPLY AIR TEMPERATURE AS SCHEDULED BY SEQUENCING THE PRE-HEAT SYSTEM AND COOLING AS

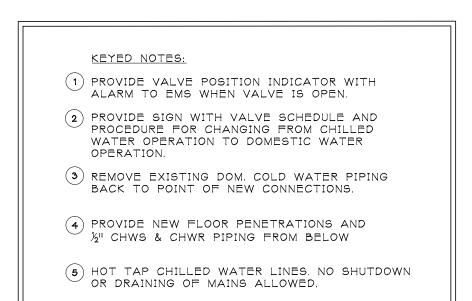
APPROXIMATELY % DISTANCE OF PRIMARY DUCT RUNS.

COOLING - ON CALL FOR COOLING MODULATE CHILLED WATER VALVE TO MAINTAIN SA TEMPERATURE SET POINT. PREHEAT SYSTEM - ON CALL FOR HEAT START AND RUN HCP-1 CONTINUOUSLY AND MODULATE STEAM VALVE ASSOCIATED WITH STEAM TO HOT GLYCOL CONVERTER TO MAINTAIN SCHEDULED DISCHARGE AIR

B. HUMIDIFICATION - RETURN (OR EXHAUST) AIR HUMIDITY SHALL BE MONITORED. ON A CALL FOR HUMIDIFICATION, HUMIDIFIER VALVE V-1 SHALL MODULATE TO MAINTAIN THE RETURN (OR EXHAUST) AIR HUMIDITY SET POINT TO 30% (ADJUSTABLE), PRIOR TO ACTIVATION OF V-1, THE ON/OFF CONTROL VALVE V-2 SHALL BE ENABLED THROUGH ECC AND JACKET TEMPERATURE SENSED BY TSH SHALL BE WARM ENOUGH TO PREVENT CONDENSATION. THE HIGH LIMIT HUMIDITY SENSOR, LOCATED IN THE SUPPLY AIR DUCT 10 FEET AWAY FROM THE HUMIDIFIER SHALL DISABLE THE HUMIDIFIER AND GIVE AN ALARM SIGNAL TO THE ECC, IF THE SUPPLY AIR HUMIDITY EXCEEDS 90% RH (ADJUSTABLE). THE AIRFLOW SWITCH SHALL PROVE AIRFLOW BEFORE HUMIDITY CONTROLS ARE

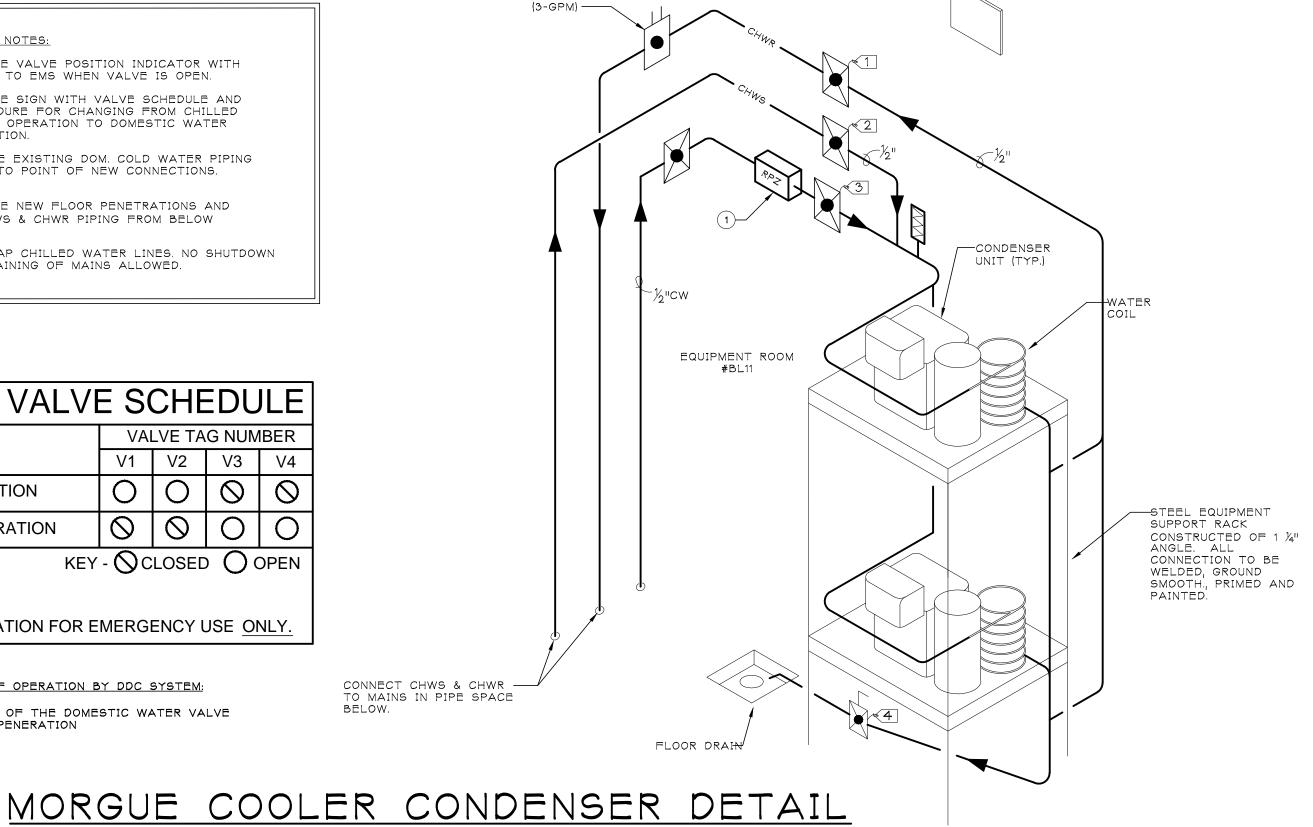
- C. UNOCCUPIED/SHUTDOWN: SUPPLY AND EXHAUST FANS TO BE OFF, CLOSE OA AND EA DAMPERS. STOP PRE-HEAT PUMP AND CLOSE HUMIDIFIER VALVE. CYCLE SUPPLY AND EXHAUST FANS OA AND EA DAMPERS, PREHEAT PUMP AND PREHEAT COIL TO MAINTAIN UNOCCUPIED TEMP SET POINT (50F ADJUSTABLE).
- E. MONITOR/ALARMS MONITOR AND REPORT CONDITION OF FANS, PUMPS FILTER, AND HUMIDITY HIGH LIMIT.
- F. SAFETY SHUTDOWN SHUT DOWN SUPPLY FAN, CLOSE OA DAMPER AND REPORT ALARM WHEN DUCT SMOKE DETECTOR OR FREEZESTAT TRIPS. MANUAL RESET REQUIRED TO RESTART UNITS. EF TO CONTINUE TO RUN

SUBJECT TO A HIGH PRESSURE LIMIT.



	VALVE TAG NUMBER								
	V1	V2	V3	V4					
1. CHILLED WATER OPERATION	0	0	0	0					
2. DOMESTIC WATER OPERATION 🛇 🔘 🔾									
KEY - OCLOSED OPEN									
NOTE:									

PROVIDE SEQUENCE OF OPERATION BY DDC SYSTEM: MONITOR THE STATUS OF THE DOMESTIC WATER VALVE USED FOR BACK-UP OPENERATION



DRAWING NOTES: DIRECT DIGITAL CONTROLS (DDC) SHALL BE PROVIDED BY JOHNSON CONTROLS, OR APPROVED EQUAL. DDC FOR THIS PROJECT SHALL BE AND EXTENSION OF, AND SHALL BE COMPATIBLE WITH, THE EXISTING DDC SYSTEM. THE EXISTING DDC SYSTEM IS A JOHNSON CONTROL SYSTEM.

528A7-12-71

ONE WEBSTER'S LANDING SYRACUSE, NEW YORK 13202 315.423.0185

IPD PROJECT No: 12-7304-8



Drawing Title MECHANICAL CONTROLS	Project Title MORGUE RENOVATIO	NS	
	Building Number 1	Checked SBG	Drawn NCB

SYRACUSE, NY

